



## New distribution records for Neriidae (Diptera, Schizophora) from northeastern Brazil

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**Abstract.** The geographic ranges in Brazil of 4 species of Neriidae are widened. New records are recorded of the following species and Brazilian states: *Eoneria blanchardi* Aczél, 1951 from Pernambuco and Paraíba, *Glyphidops carrerai* Aczél, 1961 and *Glyphidops filosus* (Fabricius, 1805) from Bahia and Paraíba, and *Nerius pilifer* Fabricius, 1805 from Paraíba. A referential map is included to these species.

**Key words.** Atlantic Forest species; Bahia; Caatinga species; cactus flies; Neriidae; Paraíba; Pernambuco

The Neriidae is a small family of acalyptate flies found in all biogeographic regions although they predominate in the tropics. Currently, in the Neotropical region 37 valid species in 9 genera are recognized (STEYSKAL 1968, BUCK & MARSHALL 2004, SEPÚLVEDA et al. 2013a, 2013b, 2014). Neriids are medium-sized to large flies (5–25 mm) and adults are distinguished by their dorsoventrally flattened head, generally longer than high, with frons and face projected; a long lunule that is exposed in Neotropical species, deeply grooved medially, forming peculiar antennal bases; porrect antennae with apical or dorsoapical arista and pedicel with an inner apicomедial projection; narrow wing with  $R_{4+5}$  and M convergent; long and slender legs, often with spine-like setae in anteroventral and posteroventral regions of femora; very narrow and elongate epandrium, flexed below abdomen; abdominal segment 7 of females developed as conspicuous oviscapte (ACZÉL 1951, 1961, BUCK 2010).

Recently a series of works on neriids from the Neotropical region have been conducted (BUCK & MARSHALL 2004, SEPÚLVEDA et al. 2013a, 2013b, 2014, KOCH et al. 2014, DUFÉK et al. 2014) that provide an important tool for species identification and make the group more suitable for other types of studies.

Fieldwork was undertaken in the states of Paraíba and Pernambuco in the Northeast Region of Brazil, by the first 2 authors and collaborators between the years 2010 and 2016 (SISBIO/ICMBio/MMA, licence #6410-1). In addition, material from Bahia housed in the Entomological Collection of the Departamento de Sistemática e Ecologia da Universidade Fed-

eral da Paraíba (DSEC) was also studied. The municipalities of Cabaceiras, Remígio and São José dos Cordeiros (Paraíba) and Santa Cruz do Capibaribe (Pernambuco) are located within the limits of the Caatinga semi-arid region. Una and Itabuna (Bahia), and João Pessoa, Mamanguape, Santa Rita and Sapé (Paraíba) are within the limits of the Atlantic Forest.

Collecting methods used were entomological net, light trap, Malaise, Moericke and baited Shannon, Van Someren-Rydin and bottle traps. Feces, garbage and a mixture of fermented fruits were used as bait. All the materials are deposited and vouchered at the DSEC collection. The materials examined are listed for each species. Specimens are listed in alphabetical order by state and city. Sex and number of individuals are provided, and additional information is enclosed in brackets ([and]).

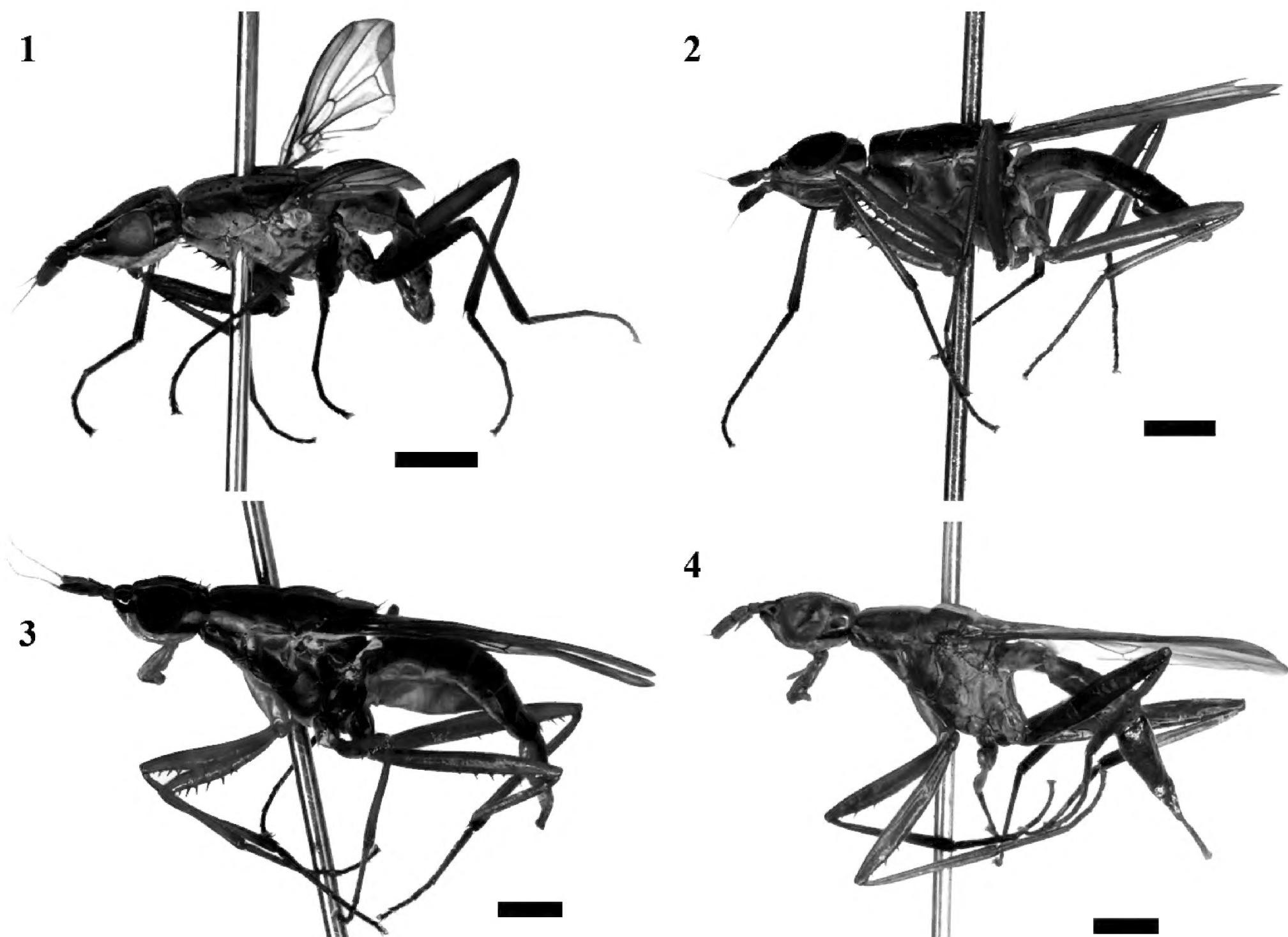
The specimens were identified in the laboratory using identification keys (ACZÉL 1961, SEPÚLVEDA et al. 2013a, 2014), compared with photographs of the available type material and studied by the 2 authors. We found 10 new locality records in 3 states of the Brazilian Northeast Region (Bahia, Paraíba and Pernambuco) for 4 species of neriids. The classification of species belonging to *Glyphidops* Enderlein, 1922 follow KOCH et al. (2014).

Order Diptera Linnaeus, 1758  
Suborder Brachycera Macquart, 1834  
Infraorder Schizophora Becher, 1882  
Family Neriidae Westwood, 1840

***Eoneria blanchardi* Aczél, 1951**

Figure 1

**New records.** Brazil. Paraíba. Cabaceiras: Fazenda Bravo, Shannon [trap], Amorim & Stevaux leg., 28–29.VI.1986, 16 ♀ [DSEC, 000100-000115DP] and 1 ♂ [DSEC, 000116DP]. Remígio: Ass[entamento] Queimadas, Malaise, Suzana Aguiar leg., 13.IX.2011, 3 ♀, [DSEC, 000163-000165DP] and 1 ♂ [DSEC, 000166DP]; 22.IX.2011, 1 ♀ [DSEC, 000167DP]; 3.I.2012, 1 ♂ [DSEC, 000168DP]; 10.I.2012, 1 ♂ [DSEC, 000169DP]; 13.IX.2012, 1 ♀ [DSEC, 000170DP]; 17.XII.2012, 1 ♀ [DSEC, 000171DP]. São José dos Cordeiros: Fazenda Almas, 07°28' S,



**Figures 1–4.** Newly recorded Neriidae from northeastern Brazil. **1.** *Eoneria blanchardi* Aczél, 1951. **2.** *Glyphidops carrerai* Aczél, 1961. **3.** *Glyphidops filosus* (Fabricius, 1805). **4.** *Nerius pilifer* Fabricius, 1805. For each, habitus, lateral view; scale: 1 mm.

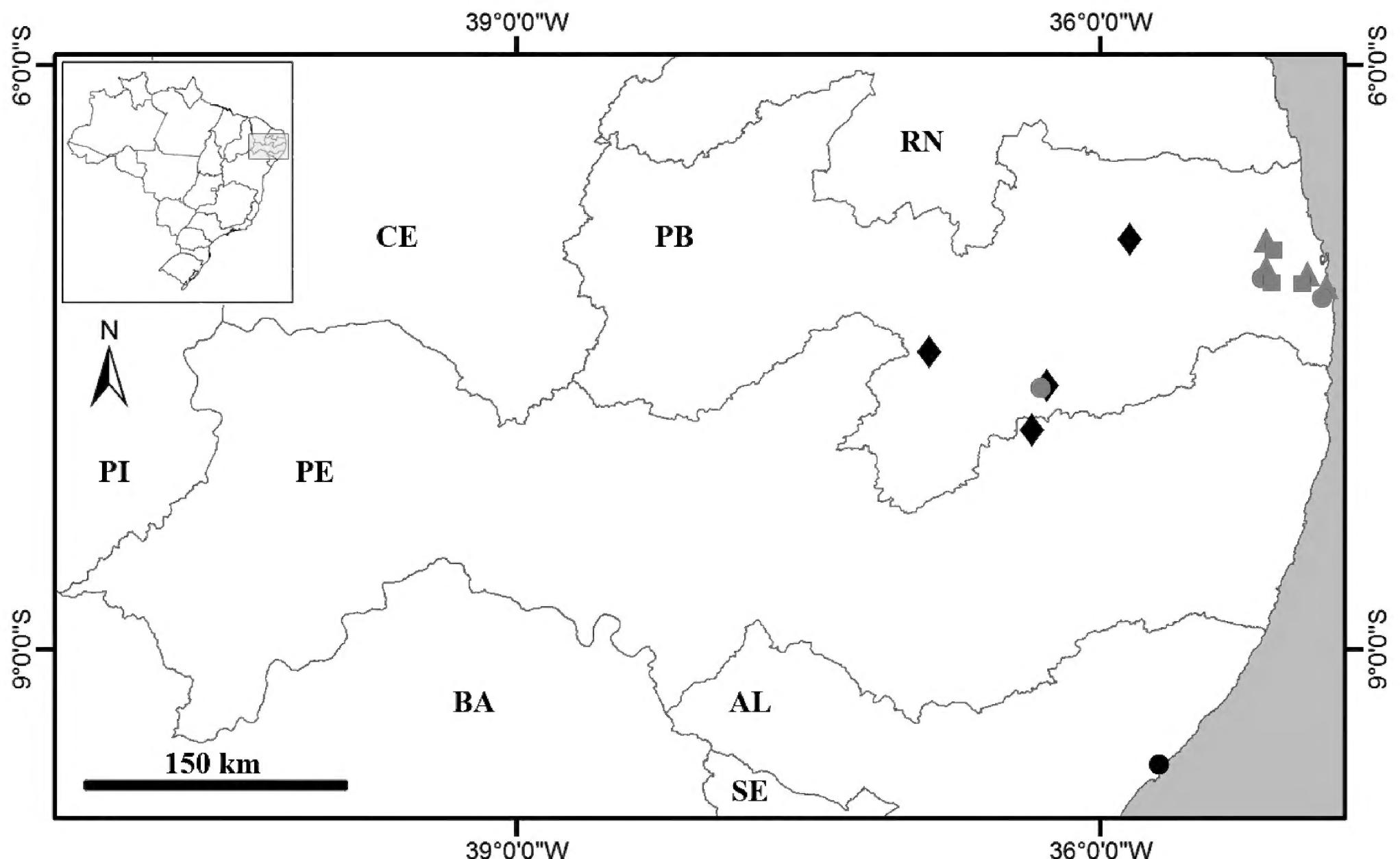
036°53'W, W.E. Santos leg., 15.X.2010, 1 ♀ [DSEC, 000117DP] and 2 ♂ [DSEC, 000118, 000119DP]; 16.X.2010, 1 ♀ [DSEC, 000120DP]; 17.X.2010, 2 ♀ [DSEC, 000121, 000122DP]; 18.X.2010, 4 ♀ [DSEC, 000123-000126DP] and 1 ♂ [DSEC, 000127DP]; 21.X.2010, 2 ♀ [DSEC, 000128, 000129DP]; 22.X.2010, 3 ♀ [DSEC, 000130-000132DP]; 22.X.2010, 2 ♀ [DSEC, 000133, 000134DP]; 24.X.2010, 2 ♀ [DSEC, 000135, 000136DP]; 25.X.2010, 2 ♀ [DSEC, 000137, 000138DP]; 26.X.2010, 1 ♀ [DSEC, 000139DP]; 10.II.2011, 1 female, [DSEC, 000140DP]; 11.II.2011, 1 ♀ [DSEC, 000141DP]; 12.II.2011, 2 ♀ [DSEC, 000142, 000143DP]; 13.II.2011, 2 ♀ [DSEC, 000144, 000145DP]; 15.II.2011, 1 ♀ [DSEC, 000146DP]; 16.II.2011, 2 ♀ [DSEC, 000147, 000148DP]; 17.II.2011, 2 ♀ [DSEC, 000149, 000150DP]; 18.II.2011, 1 ♀ [DSEC, 000151DP]; 19.II.2011, 1 ♀ [DSEC, 000152DP]; V[an] S[omeren-Rydon trap] frutas [= fermented fruits], I.S. Braga & A.P. Colavite leg., 04–08.III.2016, 6 ♀ [DSEC, 000153-000158DP] and 3 ♂ [DSEC, 000159-000161DP]; Luminosa [= light trap], I.S. Braga & A.P. Colavite leg., 05–08.III.2016, 1 ♀ [DSEC, 000162DP]. PERNAMBUCO. Santa Cruz do Capibaribe: Serra do Pará, Moericke, F.M.G. de Las-Casas leg., 19–22.VI.2011, 6 ♀ [DSEC, 000172-000177DP]; 18–20.IX.2011, 1 ♀ [DSEC, 000178DP]; 22–24.X.2011, 1 ♀ [DSEC, 000179DP]; Malaise, 23.V–23.VI.2012, 2 ♀ [DSEC, 000180, 000181DP]; 23.VI–23.VII.2012, 1 ♀ [DSEC, 000182DP]; 27–29.VIII.2012, 1 ♂ [DSEC,

000183DP]; 23.VIII–23.IX.2012, 1 ♀ [DSEC, 000184DP]; 24.X–23.XI.2012, 5 ♀ [DSEC, 000185-000189DP]; Moericke, 23.XI–23.XII.2012, 1 ♂ [DSEC, 000190DP]; Malaise, 20.XII.2012–23.I.2013, 2 ♀ [DSEC, 000191, 000192DP]; 23.II–23.III.2013, 1 ♀ [DSEC, 000193DP]; 23.IV–23.V.2013, 3 ♀ [DSEC, 000194-000196DP] and 2 ♂ [DSEC, 000197, 000198DP]; 23.IV–23.VII.2013, 1 ♀ [DSEC, 000199DP]; 23.VII–23.VIII.2013, 3 ♀ [DSEC, 000200-000202DP].

**Updated known distribution** (\* = new records). Argentina (Jujuy, Chaco, Corrientes and La Rioja) and Brazil (Bahia, Paraíba\* and Pernambuco\*) (ACZÉL 1951, 1961, STEYSKAL 1968, SEPÚLVEDA et al. 2013a, DUFEK et al. 2014).

**Diagnosis.** Frontal vitta mainly ochraceous pruinose, except for 2 lateral yellowish brown Y-shaped pruinose stripes from the anterior margin of frons to converge on the ocellar tubercle; fronto-orbital plate with three pairs of well-developed fronto-orbital setae; male fore tibiae with 2 ventral rows of small spine-like setae; fore femur with 1 dorsal distomedial seta (SEPÚLVEDA et al. 2013a).

*Eoneria blanchardi* (Fig. 1) was known to Brazil only by the record of a sole female from Milagres, Bahia (SEPÚLVEDA et al. 2013a) (Fig. 6). The species is recorded for the first time to the states of Paraíba (Cabaceiras, Remígio and São José dos Cordeiros) and Pernambuco (Santa Cruz do Capibaribe) (Fig. 5). The new records extend the distribution of this species from



**Figure 5.** Distribution records of Neriidae in the Brazilian Northeast Region. *Eoneria blanchardi* Aczél, 1951 (black rhombus); *Glyphidops carrerai* Aczél, 1961 (red triangle); *Glyphidops filosus* (Fabricius, 1805) (blue circle; black circle denotes previous known record; pink circle denotes the doubtful record); *Nerius pilifer* Fabricius, 1805 (green square). State abbreviations: AL, Alagoas; BA, Bahia; CE, Ceará; PB, Paraíba; PI, Piauí; RN, Rio Grande do Norte; SE, Sergipe.

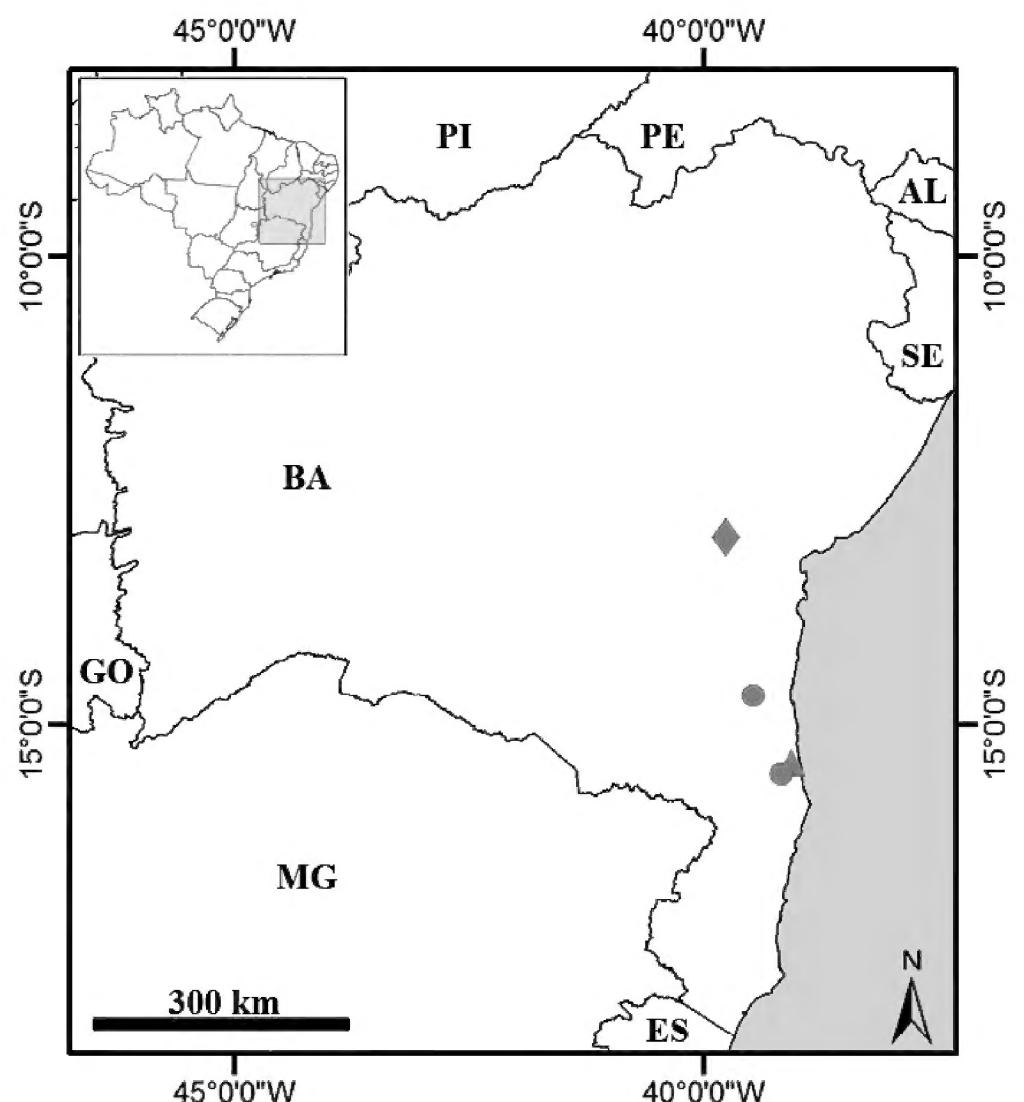
its previous occurrence locality in Milagres by approximately 670 km north to Serra do Pará (Santa Cruz do Capibaribe), 680 km north to Fazenda Almas (São José dos Cordeiros), 710 km north to Fazenda Bravo (Cabaceiras) and 790 km north to Assentamento Queimadas (Remígio). Fieldwork in the Atlantic Forest was unsuccessful in finding *E. blanchardi* and seems to indicate that this species is restricted to the Brazilian semi-arid region.

#### *Glyphidops carrerai* Aczél, 1961

Figure 2

**New records.** Brazil. Bahia. Una: 10 km SE S[ão]. José, Mata Atlântica, Armadilha [= trap] Shannon com lixo [= garbage], D.S. Amorim & C. Vasconcelos leg., 07–25.X.1986, 2 ♀ [DSEC, 000203, 000204DP]. Paraíba. João Pessoa: Mata do Buraquinho, col[eta]. ativa, A. Pereira-Colavite leg., 05.VI–07.IV.2015, 1 ♀ [DSEC, 000205DP], 1 ♂ [DSEC, 000206DP]. Mamanguape: REBIO Guaribas, V[an] S[omeren-Rydon trap] banana, I.S. Braga & A.P. Colavite leg., 10–11.XII–07.IV.2015, 1 ♀ [DSEC, 000207DP] and 1 ♂ [DSEC, 000208DP]. Santa Rita: RPPN Eng[enso]. Gargaú, V[an] S[omeren-Rydon trap] dossel, I.S. Braga leg., 07–12.VIII.2015, 1 ♂ [DSEC, 000209DP]. Sapé: RPPN Faz[enda]. Pacatuba, dossel frutas, I.S. Braga & A.P. Colavite leg., 31.III–07.IV.2016, 6 ♀ [DSEC, 000210–000215DP] and 1 ♂ [DSEC, 000216DP].

**Updated known distribution** (\* = new records): Brazil (Amazonas, Bahia\*, Pará, Paraíba\*, Rio de Janeiro, São



**Figure 6.** Distribution records of Neriidae in the Brazilian Northeast Region. *Eoneria blanchardi* Aczél, 1951 (orange rhombus denotes previous known record); *Glyphidops carrerai* Aczél, 1961 (red triangle); *Glyphidops filosus* (Fabricius, 1805) (blue circle). State abbreviations: AL, Alagoas; BA, Bahia; ES, Espírito Santo; GO, Goiás; MG, Minas Gerais; PE, Pernambuco; PI, Piauí; SE, Sergipe.

Paulo), Colombia and Guyana (ACZÉL 1961, STEYSKAL 1968, SEPÚLVEDA et al. 2014).

**Diagnosis.** Frontal vitta yellow with pale brownish Y-shaped stripe, darker in front of the ocellar tubercle; first flagellomere oblong; length less than twice width; arista apical; scutum dorsally with 2 white pruinescent stripes, separated by wide median brown stripe that widens and fades after transverse suture; anterior notopleural seta hair-like and slender; femora yellow; hind femur with 2 dorsal distomedial setae; basicosta with dorsal and ventral yellow and hair-like setae (SEPÚLVEDA et al. 2014).

The first records of the *Glyphidops carrerai* (Fig. 2) in the Brazilian Northeast Region are presented in this study. The species had been previously collected only in the Brazilian Southeast and North regions. The occurrence to Una (Bahia) expands the distribution of the species at least 720 km north of Rio de Janeiro (Fig. 6). The records from the municipalities of João Pessoa, Mamanguape, Santa Rita and Sapé are new occurrences in Paraíba (Fig. 5).

#### *Glyphidops filosus* (Fabricius, 1805)

Figure 3

**New records.** Brazil. Bahia. Itabuna: Fazenda Unacau, Shannon [trap], D.S. Amorim & C. Vasconcelos leg., 07–27.X.1986, 3 undetermined sex [DSEC, 000233-000235DP] and 1 ♀ [DSEC, 000236DP]. Una: 10 km SE S[ão] José, Mata Atlântica, Armadilha [= trap] Shannon with garbage, D.S. Amorim & C. Vasconcelos leg., 07–25.X.1986, 13 ♀ [DSEC, 000217-000229DP] and 3 ♂ [DSEC, 000230-000232DP]. Paraíba. Cabaceiras: Fazenda Bravo, Malaise, D.S. Amorim leg., 01.VII–15.VIII.1986, 1 ♂ [DSEC, 000239DP]. Sapé: RPPN Faz[enda]. Pacatuba, V[an] S[omeren-Rydon trap] banana, A.C.F. Alves leg., 05–07.IV.2016, 2 ♀ [DSEC, 000237, 00238DP].

**Updated known distribution** (\* = new records). Bolivia, Brazil (Acre, Alagoas, Amazonas, Bahia, Espírito Santo, Mato Grosso, Minas Gerais, Pará, Paraíba\*, Rio de Janeiro, Roraima, Santa Catarina and São Paulo), Colombia, Costa Rica, Ecuador, Guatemala, Guyana, Honduras, Montserrat, Panama, Surinam, Trinidad and Venezuela (ACZÉL 1961, STEYSKAL 1968, SEPÚLVEDA et al. 2014).

**Diagnosis.** Frontal vitta yellow with ovate black spot on posterior third, covering the ocellar tubercle, separated in color from brown occiput; first flagellomere lanceolate with arista apical; scutum dorsally with 2 white pruinescent stripes, separated by wide median brown stripe that narrows after transverse suture; supra-alar seta absent (SEPÚLVEDA et al. 2014).

In the Brazilian Northeast Region *Glyphidops filosus* (Fig. 3) was previously recorded to the states of Alagoas (Maceió) and Bahia (no specific site) (ACZÉL 1961, SEPÚLVEDA et al. 2014). The occurrences in the municipalities of Una and Itabuna are new records for Bahia (Fig. 6). For the first time this species is recorded from Paraíba (Sapé), expanding distribution of this species by approximately 300 km north of the previous records (Fig. 5). The DSEC has a male specimen labeled as collected at Fazenda Bravo, Cabaceiras. Cabaceiras is located in the Paraíba backwoods region; this would represent the first record of *Glyphidops* from the Brazilian semi-arid region. According

to ACZÉL (1961) and SEPÚLVEDA et al. (2014) and based on materials in Brazilian collections studied by the second author, *Glyphidops* occurs in all Brazilian biomes except the Caatinga. The Cabaceiras record is the first from this biome (Fig. 5); however, intensive surveys carried out in several other parts of the semi-arid regions of Paraíba were not fruitful in finding other specimens, and throughout the New World there are no valid records of *Glyphidops* for arid and semi-arid areas. Thus, the Cabaceiras record is suspect, and it should be viewed with caution.

#### *Nerius pilifer* Fabricius, 1805

Figure 4

**New records.** Brazil. Paraíba. Mamanguape: REBIO Guaribas, V[an] S[omeren-Rydon trap] banana, I.S. Braga & A.P. Colavite leg., 08–10.XII.2015, 1 ♀ [DSEC, 000243DP]. Santa Rita: Carne, A.C.F. Alves leg., 11.II.2015, 1 ♀ [DSEC, 000240DP]; RPPN Eng[enso]. Gargaú, Dossel, A.L.V. Silva leg., 11.VIII.2015, 1 ♀ [DSEC, 000241DP]; Cartão [= stick card] Sub-bosque, 1 ♀ [DSEC, 000242DP]. Sapé: Fazenda Pacatuba, fezes, A.C.F. Alves leg., 31.III–07.IV.2016, 1 ♀ [DSEC, 000244DP]; dossel frutas, I.S. Braga & A.P. Colavite leg., 1 ♀ [DSEC, 000245DP] and 1 ♂ [DSEC, 000246DP]; V[an] S[omeren-Rydon trap] frutas, 1 ♂ [DSEC, 000247DP].

**Updated known distribution** (\* = new records). Argentina (Jujuy, Misiones, Chaco, Tucumán, Corrientes), Bolivia, Brazil (Acre, Amazonas, Bahia, Goiás, Mato Grosso do Sul, Mato Grosso, Minas Gerais, Pará, Paraíba\*, Rio de Janeiro, Rondônia, São Paulo and Tocantins), Colombia, Costa Rica, Ecuador, Guyana, Haiti, Mexico (Tabasco), Nicaragua, Panama, Paraguay, Peru, Suriname and Venezuela (ACZÉL 1951, 1961, STEYSKAL 1968, DUFEK et al. 2014).

**Diagnosis.** Mesofrons red-ferruginous, with a central brown band from the middle to posterior region; occiput shiny and dark brown; escape and pedicel brown, antennal base shiny and dark brown; thorax brown with pale pruinescence; thorax in superior view with a broad grayish strip, separated by very thin and brown line; anterior notopleural seta reduced; basicosta with one small seta; a pair of dorsocentral setae; legs dark brown; forefemur with an outstanding anteroventral row of spines (ACZÉL 1951).

*Nerius pilifer* (Fig. 4) is the most widely distributed species of Neriidae in the Neotropical region, with records from southern Mexico to northern Argentina (ACZÉL 1961, DUFEK et al. 2014). The species is also widely distributed in Brazil and from the Brazilian Northeast Region is known only from Bahia but without specific location (ACZÉL 1961). Its first occurrence in Paraíba (municipalities of Mamanguape, Santa Rita and Sapé; Fig. 5), was recorded in this study.

The present study represents an update on the distributional patterns of cactus flies in Northeast Region of Brazil. The total number of species known for this region is now 5: *Eoneria blanchardi* to Bahia, Paraíba and Pernambuco; *Glyphidops carrerai* to Bahia and Paraíba; *G. filosus* to Alagoas, Bahia and Paraíba; *Nerius pilifer* to Bahia and Paraíba; and *Longina abdominalis* Wiedemann, 1830 to Bahia (STEYSKAL 1968). *Glyphidops carrerai* is a new occurrence to northeastern Brazil. Excluding *L. abdominalis*, our records of neriids presented

here increase the known range of all other species and represent other important new findings, such the restricted occurrence of *E. blanchardi* to the semi-arid region. We emphasize the need for further studies and collections that will provide a better understanding of the biodiversity of the Neriidae. Moreover, additional investigations into the distribution patterns of cactus flies will allow for studies on the taxonomy, systematics and biogeography of this group because such investigations can provide specimens and new records to support further studies.

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